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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/701,879	11/05/2003	Amar K. Mohanty	MSU 4.1-617	6700

21036 7590 01/16/2007

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EXAMINER	
STAICOVICI, STEFAN	
ART UNIT	PAPER NUMBER
1732	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/701,879	MOHANTY ET AL.	
	Examiner	Art Unit	
	Stefan Staicovici	1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 October 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,9-15 and 17-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7, 9-15 and 17-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicants' amendment filed October 23, 2006 has been entered. Claims 1-7, 9-15 and 17-22 are pending in the instant application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-7, 9-15 and 17-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sears *et al.* (US 2002/0000683 A1) in view of Hamada *et al.* (US Patent No. 4,885,340) and in further view of Cobb *et al.* (US Patent No. 6,100,320) and Sato (US Patent No. 4,619,879).

Sears *et al.* (US 2002/0000683 A1) teach the basic claimed process for making a fiber reinforced thermoplastic polymer composition including, melt-blending pellets of a nylon material (thermoplastic) (second pellets) and cellulosic fibers (temperature sensitive natural fillers), extruding said mixture into strands (second strands extruded from a second extruder) and comminuting said extruded strands into pellets to be used in a later, injection molding process (see paragraphs [0035]-[0044]).

Regarding claims 1, 10 and 18, although Sears *et al.* (US 2002/0000683 A1) teach nylon pellets, Sears *et al.* (US 2002/0000683 A1) do not teach forming nylon pellets by

pelletizing extruded first strands. However, forming nylon pellets by pelletizing extruded nylon strands is well known as evidenced by Hamada *et al.* ('340) who teach a process for making nylon pellets including, providing a nylon composition, extruding said mixture into first strands, cooling said strands and cutting said first strands into nylon modified pellets. Therefore, it would have been obvious for one of ordinary skill in the art to form a nylon mixture, extrude said mixture into first strands, cool said strands and cut said first strands as taught by Hamada *et al.* ('340) to obtain the nylon pellets in the process of Sears *et al.* (US 2002/0000683 A1) because Hamada *et al.* ('340) teach an efficient process of making nylon pellets, whereas Sears *et al.* (US 2002/0000683 A1) teach nylon pellets, hence requiring the teachings of Hamada *et al.* ('340) to function as described and also because of its well known status.

Further regarding claims 1, 10 and 18, and in regard to claims 5, 14 and 21, although Sears *et al.* (US 2002/0000683 A1) in view of Hamada *et al.* ('340) teach a nylon modified composition, Sears *et al.* (US 2002/0000683 A1) in view of Hamada *et al.* ('340) do not teach adding 2.5-5 percent by weight of a metal salt to a thermoplastic composition in making thermoplastic pellets, thereby forming a reaction product between the thermoplastic material and the metallic salt. Cobb *et al.* ('320) teach a process for making a polymer composition including, adding about 0.05 to 2 percent by weight of a zinc salt (metal salt)(zinc chloride) to a thermoplastic material in order to reduce the melting temperature of the thermoplastic material (see Abstract and col. 2, lines 55-62). Sato ('962) teaches the desirability of adding a low melting point additive to a nylon material (thermoplastic), thereby reducing its melting temperature (see col. 2, lines 43-46 and col. 3, line 55 through col. 4, line 17) in order to provide improved

processing at a temperature of about 180 ^{O}C to about 230 ^{O}C (second lower melting temperature of less than 200 ^{O}C). Therefore, in view of the teachings of Sato ('962), it would have been obvious for one of ordinary skill in the art to add about 0.05 to 2 percent by weight of a zinc salt as taught by Cobb *et al.* ('320) to the nylon (thermoplastic) composition in making nylon (thermoplastic) pellets in the process of Sears *et al.* (US 2002/0000683 A1) in view of Hamada *et al.* ('340) because, Sato ('962) specifically teaches the desirability of adding a low melting point additive to a nylon (thermoplastic) material, hence suggesting the use of the low melting point additive because the process of Sears *et al.* (US 2002/0000683 A1) in view of Hamada *et al.* ('340) requires nylon (thermoplastic) pellets and also because, Cobb *et al.* ('320) specifically teach that adding a low melting point additive reduces melt fracture and provides for increased processing speed, hence providing for increased productivity and an improved molded product. It is noted that because Sato ('962) teaches the desirability of adding a low melting point additive to a nylon material (thermoplastic) in order to reduce its melting temperature to less than 200 ^{O}C to improve processability (see col. 2, lines 43-46 and col. 3, line 55 through col. 4, line 17), it is submitted that the temperature sensitive natural fillers would degrade during processing in the absence of the low melting point additive in the process of Sears *et al.* (US 2002/0000683 A1) in view of Hamada *et al.* ('340) and in further view of Cobb *et al.* ('320) and Sato ('879).

In regard to claims 2-3, 11 and 20, Sears *et al.* (US 2002/0000683 A1) teach pulp (cellulosic) fibers (see paragraph [0037]) and wood fibers (see paragraph [0020]).

Specifically regarding claims 4, 13, and 19, Sears *et al.* (US 2002/0000683 A1) teach a nylon thermoplastic material (see paragraph [0055]).

Regarding claim 6, Sato ('962) teaches the use of lithium halide to lower the melting temperature of a nylon composition (see col. 2,lines 40-60).

In regard to claims 7 and 15, Sears *et al.* (US 2002/0000683 A1) teaches extrusion and injection molding (see paragraphs [0043] and [0046]).

Specifically regarding claims 9, 17, and 22, Sears *et al.* (US 2002/0000683 A1) teach glass fibers (see paragraph [0057]).

Regarding claim 12, Sears *et al.* (US 2002/0000683 A1) teach a compatibilizer (see paragraph [0032]). It is well known that a compatibilizer for a resin composite is a maleated compatibilizer. Therefore, it would have been obvious for one of ordinary skill in the art to provide a maleated compatibilizer in the process of Sears *et al.* (US 2002/0000683 A1) in view of Hamada *et al.* ('340) and in further view of Cobb *et al.* ('320) and Sato ('962) because Sears *et al.* (US 2002/0000683 A1) teach a compatibilizer (see paragraph [0032]), hence suggesting the use of a maleated compatibilizer. Further regarding claim 12, although Sears *et al.* (US 2002/0000683 A1) in view of Hamada *et al.* ('340) and in further view of Cobb *et al.* ('320) and Sato ('962) teach additives, Sears *et al.* (US 2002/0000683 A1) in view of Hamada *et al.* ('340) and in further view of Cobb *et al.* ('320) do not teach a rubber toughening agent. However, the use of rubber as a toughening agent is well known. It would have been obvious for one of ordinary skill in the art to provide rubber as a toughening agent in the process of Sears *et al.* (US 2002/0000683 A1) in view of Hamada *et al.* ('340) and in further view of Cobb *et al.* ('320) and Sato ('962) because of known advantages such as reduced cracking and increased mechanical strength, hence providing for an improved product.

4. Claims 1-7, 9-15 and 17-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sears *et al.* (US 2002/0000683 A1) in view of Hamada *et al.* (US Patent No. 4,885,340) and in further view of Sato (US Patent No. 4,619,879).

Sears *et al.* (US 2002/0000683 A1) teach the basic claimed process for making a fiber reinforced thermoplastic polymer composition including, melt-blending pellets of a nylon material (thermoplastic) (second pellets) and cellulosic fibers (fillers), extruding said mixture into strands (second strands extruded from a second extruder) and comminuting said extruded strands into pellets to be used in a later, injection molding process (see paragraphs [0035]-[0044]). It is submitted that the nylon material has a melting temperature of about 200 ^{O}C, hence a processing (extrusion) temperature of about 200 ^{O}C.

Regarding claims 1, 10 and 18, although Sears *et al.* (US 2002/0000683 A1) teach nylon pellets, Sears *et al.* (US 2002/0000683 A1) do not teach forming nylon pellets by pelletizing extruded first strands. However, forming nylon pellets by pelletizing extruded nylon strands is well known as evidenced by Hamada *et al.* ('340) who teach a process for making nylon pellets including, providing a nylon composition, extruding said mixture into first strands, cooling said strands and cutting said first strands into nylon modified pellets. Therefore, it would have been obvious for one of ordinary skill in the art to form a nylon mixture, extrude said mixture into first strands, cool said strands and cut said first strands as taught by Hamada *et al.* ('340) to obtain the nylon pellets in the process of Sears *et al.* (US 2002/0000683 A1) because Hamada *et al.* ('340) teach an efficient process of making nylon pellets, whereas Sears *et al.* (US 2002/0000683 A1) teach nylon pellets, hence requiring the teachings of Hamada *et al.* ('340) to

function as described and also because of its well known status.

Further regarding claims 1, 10 and 18, and in regard to claims 5, 14 and 21, although Sears *et al.* (US 2002/0000683 A1) in view of Hamada *et al.* ('340) teach a nylon modified composition, Sears *et al.* (US 2002/0000683 A1) in view of Hamada *et al.* ('340) do not teach adding 2.5-5 percent by weight of a metal salt to a thermoplastic composition in making thermoplastic pellets, thereby forming a reaction product between the thermoplastic material and the metallic salt. Sato ('962) teaches the desirability of adding 1-12 percent by weight of lithium chloride (a low melting point metal salt additive) to a nylon composition (thermoplastic), thereby reducing its melting temperature (see col. 2, lines 38-60 and col. 3, line 55 through col. 4, line 17) in order to provide improved processing at a temperature of about 180 ^{O}C to about 230 ^{O}C (second lower melting temperature of less than 200 ^{O}C). Therefore, it would have been obvious for one of ordinary skill in the art to add about 1-12 percent by weight of lithium chloride as taught by Sato ('962) to a nylon (thermoplastic) composition in making nylon (thermoplastic) pellets in the process of Sears *et al.* (US 2002/0000683 A1) in view of Hamada *et al.* ('340) because, Sato ('962) specifically teaches the desirability of adding a low melting point additive to a nylon (thermoplastic) material, hence suggesting the use of the low melting point additive because the process of Sears *et al.* (US 2002/0000683 A1) in view of Hamada *et al.* ('340) requires nylon (thermoplastic) pellets and also because of known advantages such as reduced melt fracture and increased productivity. It is noted that because Sato ('962) teaches the desirability of adding a low melting point additive to a nylon material (thermoplastic) in order to reduce its melting temperature to less than 200 ^{O}C to improve processability (see col. 2, lines 43-

46 and col. 3, line 55 through col. 4, line 17), it is submitted that the temperature sensitive natural fillers would degrade during processing in the absence of the low melting point additive in the process of Sears *et al.* (US 2002/0000683 A1) in view of Hamada *et al.* ('340) and in further view of Sato ('879).

In regard to claims 2-3, 11 and 20, Sears *et al.* (US 2002/0000683 A1) teach pulp (cellulosic) fibers (see paragraph [0037]) and wood fibers (see paragraph [0020]).

Specifically regarding claims 4, 13, and 19, Sears *et al.* (US 2002/0000683 A1) teach a nylon thermoplastic material (see paragraph [0055]).

Regarding claim 6, Sato ('962) teaches the use of lithium halide (lithium chloride) to lower the melting temperature of a nylon composition (see col. 2,lines 40-60). Therefore, it would have been obvious for one of ordinary skill in the art to add about 1-12% by weight of lithium chloride as taught by Sato ('962) to a nylon (thermoplastic) composition in making nylon (thermoplastic) pellets in the process of Sears *et al.* (US 2002/0000683 A1) in view of Hamada *et al.* ('340) because, Sato ('962) specifically teaches the desirability of adding a low melting point additive to a nylon (thermoplastic) material, hence suggesting the use of the low melting point additive because the process of Sears *et al.* (US 2002/0000683 A1) in view of Hamada *et al.* ('340) requires nylon (thermoplastic) pellets and also because of known advantages such as reduced melt fracture and increased productivity.

In regard to claims 7 and 15, Sears *et al.* (US 2002/0000683 A1) teaches extrusion and injection molding (see paragraphs [0043] and [0046]).

Specifically regarding claims 9, 17, and 22, Sears *et al.* (US 2002/0000683 A1) teach

glass fibers (see paragraph [0057]).

Regarding claim 12, Sears *et al.* (US 2002/0000683 A1) teach a compatibilizer (see paragraph [0032]). It is well known that a compatibilizer for a resin composite is a maleated compatibilizer. Therefore, it would have been obvious for one of ordinary skill in the art to provide a maleated compatibilizer in the process of Sears *et al.* (US 2002/0000683 A1) in view of Hamada *et al.* ('340) and in further view of Cobb *et al.* ('320) and Sato ('962) because Sears *et al.* (US 2002/0000683 A1) teach a compatibilizer (see paragraph [0032]), hence suggesting the use of a maleated compatibilizer. Further regarding claim 12, although Sears *et al.* (US 2002/0000683 A1) in view of Hamada *et al.* ('340) and in further view of Cobb *et al.* ('320) and Sato ('962) teach additives, Sears *et al.* (US 2002/0000683 A1) in view of Hamada *et al.* ('340) and in further view of Cobb *et al.* ('320) do not teach a rubber toughening agent. However, the use of rubber as a toughening agent is well known. It would have been obvious for one of ordinary skill in the art to provide rubber as a toughening agent in the process of Sears *et al.* (US 2002/0000683 A1) in view of Hamada *et al.* ('340) and in further view of Cobb *et al.* ('320) and Sato ('962) because of known advantages such as reduced cracking and increased mechanical strength, hence providing for an improved product.

Response to Arguments

5. Applicants' arguments filed October 23, 2006 have been fully considered.

6. Applicants argue that that the prior art of record does not teach or suggest "the use of temperature sensitive fillers which would degrade without the metal salt in the pre-extruded

mixture of the polymer and the metal salt" (see page 10 of the amendment filed 10/23/2006). In response, it is noted that, "[I]n considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom." See MPEP §2144.01, citing, In re Preda, 401 F.2d 825, 826, 59 USPQ 342, 344 (CCPA 1968). As such, because Sato ('962) teaches the desirability of adding a low melting point additive to a nylon material (thermoplastic) in order to reduce its melting temperature such as to improve processability at a temperature of 180-230 ^{O}C (less than 200 ^{O}C) (see col. 2, lines 43-46 and col. 3, line 55 through col. 4, line 17), it is submitted that the temperature sensitive natural fillers would degrade during processing in the absence of the low melting point additive in the process of Sears *et al.* (US 2002/0000683 A1) in view of Hamada *et al.* ('340) and in further view of Sato ('879) or in the alternative, in the process of Sears *et al.* (US 2002/0000683 A1) in view of Hamada *et al.* ('340) and in further view of Cobb *et al.* ('320) and Sato ('879). Furthermore, it is noted that because the prior art of record specifically teaches substantially the identical thermoplastic composition including, a nylon resin, pulp or wood fibers and, a zinc salt or lithium chloride additive, it is submitted that substantially identical characteristics are expected. "Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established." See MPEP §2112.01, citing, In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977).

7. In response to applicant's arguments against the references individually (see pages 10-11 of the amendment filed 10/23/2006), one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stefan Staicovici, Ph.D. whose telephone number is (571) 272-1208. The examiner can normally be reached on Monday-Friday 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson, can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Stefan Staicovici, PhD

Stefan Staicovici 1/8/07

Primary Examiner

AU 1732

January 8, 2007